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This report considers the early stages of grammatical development in the child. It summarizes some cross-linguistic similarities in acquisition of several different types of languages: English (both white and black, lower and middle class), German, Russian, Finnish, Samoan, and Luo. With this small but diverse collection of languages and cultures the author is in a position to consider varied speech input to the child and observe what remains constant in the course of language acquisition. He finds a number of small, intriguing differences but believes that "what is remarkable at first glance is the uniformity in rate and pattern of development." He traces stages of language development and points out the linguistic universals which manifest themselves at the various stages. Typically, in all cultures examined, there is a period of babbling ending somewhere around 18 months of age. Overlapping this period is a stage of single-word utterances, followed by a stage of two-word utterances at around 18-24 months. The two-word stage is often quite brief, but its structural and semantic characteristics appear to be universal. The author believes that the universality of this phase suggests the maturation of a "language acquisition device" with a fairly fixed programming span for utterances at the start. (DO)

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UNIVERSALS OF GRAMMATICAL DEVELOPMENT IN CHILDREN*

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UNIVERSALS OF GRAMMATICAL DEVELOPMENT IN CHILDREN

For the past several years an interdisciplinary research group at the University of California at Berkeley has been investigating child language development in several different cultures.[1] Susan Ervin-Tripp, John Gumperz, and I, together with graduate students in anthropology, linguistics, and psychology, have put together A Field Manual for Cross-Cultural Study of the Acquisition of Communicative Competence (Slobin, 1967). The phrase "communicative competence" reflects our concern with both psycholinguistics and sociolinguistics: we are interested in how children acquire the basic linguistic code of their community as well as the social rules for the use of linguistic forms in a variety of socially-defined settings. Some of our students have taken the field manual to research sites around the world. At present we are mid-stream in our work. The first field studies have been completed and the findings are now being analyzed; new field studies are currently in progress. We are far from any definitive results at this point, but we have already learned a good deal about the hazards and hardships of controlled research in strange lands.

In this report I will only consider one aspect of our work: the early stages of grammatical development in the child. American research has revealed that individual children go through strikingly similar stages of development in the acquisition of English grammar. What little information we have on children acquiring other native languages suggests a universality of stages and processes of acquisition. A major interest of our research is in universals of language acquisition. We believe that such an interest requires cross-cultural research. The world provides us with a vast array of "natural experiments" in which linguistic structure and social structure are varied far beyond our ability to simulate them in any artificial situation.

The first phase of our research has been to sample from this array, collecting primarily naturalistic data on child speech, with occasional attempts to employ controlled techniques for speech elicitation. The present paper summarizes some cross-linguistic similarities in acquisition of several different types of languages: English (both white and black, lower and middle class), German, Russian, Finnish, Samoan, and Luo. The English data come from American research literature and unpublished data. German data come from the literature and the work of Thomas Roeper. The Russian data come from the Soviet literature, primarily from the linguistic diaries of Gvozdev. Keith Kernan worked in Samoa; Ben Blount gathered Luo data in Kenya: and Melissa Bowerman, of Harvard, gathered the Finnish data.[2] With this small but diverse collection of languages and cultures we are in a position to consider varied speech input to the child and observe what remains constant in the course of language acquisition.

We approach grammar as a set of linguistic strategies used to express various semantic relationships in spoken utterances. Grammar is thus a device for relating sounds to meanings. When considering child grammar, much attention must be paid to the meanings conveyed and comprehended by the child. To a great extent the acquisition of grammar has as a prerequisite cognitive abilities which are involved in discerning the basic semantic categories of experience, for it is these categories and relations which are expressed in language. The underlying semantic-cognitive structure of human experience is universal, and these universals of structured experience seem to be expressed in strikingly similar fashion in child speech around the world. In fact, I have no remarkable cross-cultural or cross-linguistic divergences to report here. There are a number of small, but intriguing differences, which may excite the technical interests of the psycholinguist, but what is remarkable at first glance is the uniformity in rate and pattern of development.

Within a given culture, and between cultures, the rate of development may vary somewhat from child to child, but the order of stages seems to remain constant. Indeed, among normal, average children, the actual divergences in rate of development are not spectacular. Typically, in all of the cultures we have examined, there is a period of babbling ending somewhere around 18 months of age. Overlapping this period is a stage of single-word utterances, followed by a stage of two-word utterances at around 18-24 months. The two-word stage is often quite brief, but its structural and semantic characteristics appear to be universal. There is no a priori reason why child speech, at a certain stage, should be limited to two words in length, for children can babble much longer strings of sounds. The universality of this phase suggests the maturation of a "language acquisition device" with a fairly fixed programming span for utterances at the start.

Early speech is always "telegraphic." That is to say, it consists mainly of content words and a few operators performing special functions. The same kinds of elements are missing from child speech in all of the languages considered: articles, particles, prepositions, inflections, conjunctions, the copula. These sorts of elements are absent from the child's free speech, and tend to be omitted in imitations of adult speech. These deleted elements are grammatical functors: they mark basic categories and relations. By age three or so, instances of all of the major types of grammatical devices are present, although many fine points have yet to be acquired and overgeneralizations and overregularizations abound. But by five or six the majority of special cases and complexities appear to have been mastered, and the rest of childhood is occupied with the mastery of much more subtle--although quite interesting--aspects of the linguistic system.

At the very earliest stages the child's sentences are brief, telegraphic, and generally interpretable in context. The first sentences are

made up of unanalyzed, uninflected words, frequently using some principle of ordering to express semantic relations. In this sense, syntax comes before morphology: children combine words before they isolate and make use of such devices as prefixes and suffixes. There are, however, some interesting cross-linguistic differences in the reliance on word order as a linguistic device, and in the acquisition of various sorts of inflectional systems. But these details can only be hinted at in this brief report. (For a fuller treatment, see Slobin, in press.)

Earlier American research on two-word utterances revealed a small class of words, called "pivots" by Braine (1963) and "operators" by Ervin-Tripp and Miller (Miller and Ervin, 1964). These words tend to occur in fixed position--either first or second position--and perform certain linguistic operations. For example, one common operator is a "pointing" word, used for labelling or naming, such as "there" or "that." A child may utter hundreds of statements of the standard form: "there doggie," "there chair," "there truck," and so on. Examples of other operators are "more," "allgone," "my," and "no." In English, such frequent operators tend to have a fixed utterance position, and we expected to find similar constructions in other languages. We found strikingly similar forms in German, Russian, Samoan, and Luo. Ordinal position of operators tends to be fixed, and generally (but not always) follows the adult order. Even in Russian, where the highly inflected adult language allows for considerable freedom of word order, word order in the utterances of the one child studied in detail was quite stable. Finnish, like Russian, is highly inflected and has similar freedom of word order. And one Finnish child, like the one Russian child studied, held to a fixed order of operator and content word. A second Finnish child, however, freely used particular operators in both first and second position. In all of the languages, then, it was possible to identify a small class of frequently-occurring operators, used in conjunction

with content words. Generally, it seems, the child uses such operators in fixed position. Where the adult language allows for variable position, however, some children may not develop an order rule. However, it is of interest that at least one Russian and one Finnish child did develop an order rule, even if the adult language did not require such a rule. It is, of course, a very fundamental cognition that the order of events is frequently of significance. We have a good deal of evidence--especially at later stages--that children place considerable reliance upon word order, both in producing and interpreting grammatical utterances. At times, their attention to word order goes beyond that required by the structure of the language. For example, at a certain stage American children tend to interpret passive sentences, which have an object-verb-subject order, as if the first noun were the subject and the last the object (Fraser, Bellugi, and Brown, 1963). And German children may ignore the case endings on articles, often interpreting the first noun in a sentence as the subject even if it is marked by an accusative or dative article (Roeper, 1969).

If you ignore word order, and read through transcriptions of two-word utterances in the various languages we have studied, the utterances read like direct translations of one another, as shown in Table 1. There

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Insert Table 1 about here.

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is a great similarity of basic vocabulary and basic meanings conveyed by the word combinations. There is a small class of frequently-occurring operators performing basic functions, and a large number of content words. The following examples could have come from any of our various linguistic samples: ostension or naming: "that car," "water there," "it clock"; demand or request: "more milk," "give candy"; negation: "not eat," "no wash," "allgone milk"; possession: "my shoe," "your ball"; question: "where ball?"

Speech at the two-word stage, however, is more differentiated that a simple collection of operators and content words. The distributional facts of pivot structures do not fully reflect the nature of child language at the two-word stage. A range of semantic relations receives expression. For example, one Samoan child at this stage had constructions of verb-subject, such as "fall thing"; verb-object, such as "see hand"; and possessive noun-noun, such as "eye doll." Thus the child can also combine two content words to express various meanings. This bare statement of combinatorial possibilities, however, obscures the range of relations expressed by the child. For example, Lois Bloom (1968), at Columbia University, found that noun-noun combinations in English child speech expressed at least the following five relations: conjunction ("block, dolly"), attribution ("party hat"), genitive ("daddy hat"), subject-locative ("sweater chair"), and subject-object ("mommy book"). The child's underlying semantic competence is thus more differentiated than the surface forms of his utterances. That is, the child is aware of more types of relationships that he can reveal by the use of purely linguistic devices. The various types of relations expressed--such as genitive, locative, accusative, and the like--are expressed in adult language by means of such linguistic devices as order and inflection. Before the development of these devices, many two-word utterances require non-linguistic context in order to be interpreted, and are thus not strictly "syntactic." That is, one cannot interpret them on linguistic grounds alone. Thus, for example, one must be present on the scene to know that "daddy hat" means "daddy's hat," and not "daddy is wearing a hat."

Context and gesture are used to disambiguate utterances before the child has command of the requisite linguistic means of marking distinctions. Prosody is another early device used by children to mark differences between utterances of apparently identical structure. For example, Ervin-

Tripp and Miller noted that "CHRISTY room" (stressing the first vowel) was a possessive, meaning "Christy's room," while "Christy ROOM" (stressing the second vowel) was a locative, meaning "Christy is in the room." Thus stress carried out a function later performed by inflections and function words, then lacking in the child's language. Again, it seems that the development of underlying semantic notions (such as possession and location) runs ahead of the development of standard linguistic means for the expression of such notions.

Some two-word utterances, however--in all languages studied--use order rules to signal the meaning relation between the two words. In most of the children studied a standard order was adhered to for such relations as subject-verb and verb-object. This was the case even though, universally, sentence subjects tended overwhelmingly to be animate agents and sentence objects tended to be inanimate objects. Thus it would have been clear even from an unordered pairing of noun and verb whether the particular noun was subject or object of the verb, since the semantic classes of subject and object did not tend to overlap. The Russian child and the two Finnish children also began with fixed order of subject-verb, verb-object, and subject-object. One of the Finnish children, probably under the influence of the variable word order of the adult language, began to show variability of word order in his own speech, allowing the subject of the verb to appear either before or after the verb. However, there is evidence that even this child may have invented a sort of order rule of his own to avoid ambiguity in some cases. In two-word subject-verb sentences the position of subjects of intransitive verbs was quite free. For example an animate noun could either precede or follow such verbs as "fall," "fly," "jump," and the like. Since such verbs do not take objects, there could be no ambiguity as to whether the noun was subject or object of the verb. Subjects of transitive verbs, however, showed a fairly pronounced (though not absolute) tendency to precede the verb. For example, at one stage animate

nouns almost always came before such verbs as "tickle," "burn," and "wash" when they served as subjects, apparently to avoid any confusion that they might be interpreted as objects. In adult Finnish the subject-object distinction would be marked by inflection, whereas it is marked by order in such languages as English. It is striking that this Finnish child apparently made some attempt to use word order to mark a distinction which is not marked in this fashion in the adult language. This lends credence to the notion that the child brings certain general and universal organizing principles to bear in the process of discovering the grammar of his native tongue.

This one Finnish child, however, began to use varying word orders before he developed the inflectional means necessary to mark underlying semantic relations. This differs from the development of the Russian child, who adhered to his own rigid word order until the acquisition of inflections. For example, uninflected noun-noun combinations were always subject-object sentences until the Russina child acquired the accusative inflection to mark the object noun. Having acquired this inflection, he then went on to produce both subject-object and object-subject sentences unambiguously. This is one example of striking individual differences between children in the strategies they bring to bear in the process of language acquisition. As yet, we have no understanding of the bases of such individual differences. (Methodologically, such differences point to the serious problem of adequate sample size on which to base generalizations.

Regardless of the individual differences, however, it seems that word order has some salience as an early sort of syntactic rule developed by children exposed to different kinds of languages. All languages use order rules in some way or another, and it is therefore not surprising that order rules should appear early in child language development.

Shortly after the two-word stage, other linguistic universals also appear in child speech. The use of single words in combination with other

words is evidence that the child has segmented the flow of speech into word units. In so doing, he is apparently able to ignore the variety of inflections attached to words. The words he isolates tend to be root forms, such as the nominative singular of the noun and the verb infinitive.[3] Beyond the two-word stage, however, inflections begin to be used productively, indicating that the child has isolated word stems and inflections as morphological elements. Although the course of inflectional development can be long and complex, it is striking that the notion of inflection is so readily accessible to the two-year-old child. (Luo children, for example, began to inflect verbs for the person of subject and object immediately after the two-word stage.)

Another linguistic universal, which manifests itself in the earliest three-word utterances, is the arrangement of sentences in hierarchically organized constituents. A simple subject-verb-object sentence can already be analyzed into subject and predicate, with further differentiation of the predicate into verbal and nominal elements. In all of the children we studied there was rapid development of the constituents of noun phrases and verb phrases, with early emergence of such categories as modifier, determiner, auxiliary, and the like.

The underlying semantic notions expressed in early child speech are also universal in content. Nouns stand in particular relations to verbs, fulfilling roles such as agent, object, recipient, location, instrument, and the like. These terms sound remarkably like the traditional labels of grammatical cases. Along with other current investigators of child grammar,[4] we have been much struck by Fillmore's (1968) notions of deep grammatical case, and find early expression of the universal collection of basic case relations in all of the languages we have examined.

While the child is capable of expressing a great range of semantic relations, however, he seems to be limited in the number of such relations

which he can express in a single utterance. The performance limitations upon sentence production are quite severe in the very young child. One Samoan child, for example, could express all of the following semantic relations: verb-agent, verb-object, verb-directive, possession, labelling, benefit, and location. Yet he could generally not express more than one such relation in a single utterance. All of the children at the two-word stage could express subject-verb, verb-object, and subject-object, but could not express subject-verb-object in a single utterance. Although we lack the necessary comprehension data, it would seem that the child's understanding of semantic relations is more advanced than his ability to express this understanding. Frequently a young child must produce a series of short utterances, each containing partial information, in order to convey information which an older child could express in a single utterance. For example, Lois Bloom (1968) reports the following series of utterances in a two-year-old child: "raisin there / buy more grocery store / raisins / buy more grocery store / grocery store / raisin a grocery store." Clearly, this child had the underlying intention to verbalize something about buying more raisins at the grocery store, but she could not do so in a single complete sentence.

A major advance with age is the increasing ability to program longer and more complex utterances. For example, at one stage Finnish and American children could produce subject-verb-object sentences in the affirmative, but the presence of a negative operator in a sentence seemed to add complexity, resulting in the deletion of other elements such as the subject of the sentence. At a later stage, negation does not result in deletion of elements, but seems to limit the number of additional transformations which can be carried out in a sentence. For example, an English-speaking child studied by Bellugi-Klima (1968) was able to invert subject and auxiliary in affirmative questions, such as "Why did he come?", but

failed to invert in negative questions, producing forms such as, "Why he didn't come?" rather than "Why didn't he come?" The child was able to perform the grammatical operations required to form negatives and questions, but could not perform all of them in a single utterance. Thus important changes with age are tied to an increase in sentence-programming span. We have not yet begun to carefully examine such questions of later stages of development in languages other than English: a fruitful area of investigation awaits us here.

Increasing sentence-programming span appears to be one major determinant of the growth in linguistic complexity with age. Another major determinant is probably tied to general cognitive development. For example, Keith Kernan administered a sentence imitation test to Samoan children of different ages. In a preliminary look at his data, it seems that one can predict which sentences will be difficult to imitate on the basis of their English translations. For example, young Samoan children, like their American counterparts, seem to have difficulty in correctly repeating sentences with conditionals and with conjunctions involving semantically complex propositional relations such as "because," "unless," and "whether." Other Samoan sentences are difficult for children to imitate because of structural complexity, such as the presence of embedded clauses. Thus sentence processing ability is tied to both structure and meaning. (Absolute sentence length is itself, however, was not a good predictor of the child's success in sentence imitation.)

The important advances in language development thus seem to be tied to such variables as increasing ability to perform a number of operations in a short time, increasing short-term memory span, and increasing cognition of the categories and processes of human experience. In fact, it may be that strictly linguistic acquisition is completed by age three or so. Further development may reflect lifting of performance restrictions and

general cognitive growth, without adding anything basically new to the fundamental structures of syntactic competence. We have begun to gather data on the earliest stages of language development. We have very little data on later stages. And our understanding of the mental processes underlying the course of this development is extremely rudimentary indeed. At this point I believe we are in need of much more data on children's acquisition of various native languages, and I turn to the multilingual readership of this volume for assistance.

FOOTNOTES

1. This work has been reported on elsewhere by Susan Ervin-Tripp (1969, in press). Working papers produced by members of the research group may be obtained from the Language-Behavior Research Laboratory, University of California, Berkeley, California 94720.

2. The chief English sources are Bloom (1968), Braine (1963), Brown and Bellugi (1964), Brown and Fraser (1963), Ervin (1964), C. M. Kernan (in preparation), Miller and Ervin (1964), Wardrip (in preparation), and unpublished data from Berkeley and Harvard. German data (unfortunately sparse) come from Lindner (1898), Roeper (1969), Scupin (1907), Stern and Stern (1907). The major Russian source is Gvozdev (1949). Melissa Bowerman's Harvard dissertation on the acquisition of Finnish is presently in preparation; the Berkeley dissertations of Blount (1969) and K. Kernan (1969) have been completed. The following dissertations, not discussed here, are also in preparation at Berkeley: H. D. Argoff (Finnish and Finnish-Russian), J. Brukman (Koya), E. Hernandez (Spanish-American), B. Stross (Tzeltal), J. Tallman (Serbo-Croatian).

3. The use of standard word forms, not inflectionally marked to indicate semantic distinctions, demonstrates that two-word utterances are composed by the child, rather than being rote imitations of adult speech For example, the Russian child said day shlyapa 'give hat,' using the nominative singular form of the noun shlyapa 'hat' where the corresponding adult utterance would require the accusative day shlyapu. (For more detail on the acquisition of Russian inflections see Slobin, 1966, in press.)

4. Those who have come to my attention include: H. David Argoff (Berkeley), Lois Bloom (Columbia), Ben Blount (Texas), Melissa Bowerman (Harvard), Renira Huxley (Edinburgh), Keith Kernan (Harvard), I. M. Schlesinger (Hebrew University).

Table 1

Functions of Two-Word Sentences in Child Speech, with Examples from Several Languages[1]

Function of Utterance	Language					
	English	German	Russian	Finnish	Luo	Samoan
Locate, name	there book that car see doggie	buch da (book there) gukuk wauwau (see doggie)	Tosya tam (Tosya there)	tuossa Rina (there Rina) vettä siinä (water there)	en saa (it clock) ma wendo (this visitor)	Keith lea (Keith there)
Demand, desire	more milk give candy want gum	mehr milch (more milk) bitte apfel (please apple)	yeshche moloko (more milk) day chasy (give watch)	anna Rina (give Rina)	miya tamtam (give-me candy) adway cham (I-want food)	mai pepe (give doll) fia moe (want sleep)
Negate[2]	no wet no wash not hungry allgone milk	nicht blasen (not blow) kaffee nein (coffee no)	vody net (water no) gus'tyu-tyu (goose allgone)	ei susi (not wolf) enää pipi (anymore sore)	beda onge (my-slasher absent)	le 'ai (not eat) uma mea (allgone thing)
Describe event or situation[3]	Bambi go mail come hit ball block fall baby highchair	puppe kommt (doll comes) tiktak hängt (clock hangs) sofa sitzen (sofa sit) messer schneiden (cut knife)	mama prua (mama walk) papa bay-bay (papa sleep) korka upala (crust fell) nashla yaichko (found egg) baba kreslo (grandma armchair)	takki pois (cat away) Seppo putoo (Seppo fall) talli 'bm bm' (garage 'car')	chungu biro (European comes) odhi skul (he-went school) omoyo oduma (she-dries maize)	pa'u pepe (fall doll) tapale 'oe (hit you) tu'u lalo (put down)

Table 1 (cont'd.)

Function of utterance	Language: English	German	Russian	Finnish	Luo	Samoan
Indicate possession	my shoe mama dress	mein ball (my ball) mamas hut (mama's hat)	mami chashka (mama's cup) pup moya (navel my)	täti auto (aunt car)	kom baba (chair father)	lole a'u (candy my) polo 'oe (ball your) paluni mama (baloon mama)
Modify, qualify	pretty dress big boat	milch heiss (milk hot) armer wauwau (poor doggie)	mama khoroshaya (mama good) papa bol'shoy (papa big)	rikki auto (broken car) torni iso (tower big)	piypiy kech (pepper hot) gwen madichol (chicken black)	fa'ali'i pepe (headstrong baby)
Question[4]	where ball	wo ball (where ball)	gde papa (where papa)	missä pallo (where ball)		fea Punafu (where Punafu)

1. The examples come from a variety of studies, published and unpublished. Data from the three non-Indo-European languages are drawn from the recent doctoral dissertations of Melissa Bowerman (Harvard, in progress: Finnish), Ben Blount (Berkeley, 1969: Luo), Keith Kernan (Berkeley, 1969: Samoan). The examples given here are representative of many more utterances of the same type in each language. The order of the two words in the utterance is generally fixed in all of the languages except Finnish, where both orders can be used freely for some utterance types by some children.

2. Bloom (Columbia dissert., 1968) has noted three different sorts of negation: (1) non-existence (e.g., "no wet," meaning "dry"), (2) rejection (e.g., "no wash," meaning "don't wash me"), and (3) denial (e.g., "no girl," denying a preceding assertation that a boy was a girl).

3. Descriptions are of several types: (1) agent + action (e.g., "Bambi go"), (2) action + object (e.g., "hit ball"), (3) agent + object (e.g., "mama bread", meaning "mama is cutting bread"), (4) locative (e.g., "baby highchair," meaning "baby is in the highchair"), (5) instrumental (e.g., "cut knife"), (6) dative (e.g., "throw daddy," meaning "throw it to daddy"). (The use of the terminology of grammatical case is suggestive here; cf. Fillmore's discussion of deep cases as underlying linguistic universals.)

4. In addition to wh-questions, yes-no questions can be made by pronouncing any two-word utterance with rising intonation, with the exception of Finnish. (Melissa Bowerman reports that the emergence of yes-no questions is, accordingly, exceptionally late in Finnish child language.)

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